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## ARCUATE TAPER LOCK ANCHOR BASE PLATE AND ANCHOR ASSEMBLY WITH THE BASE PLATE

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### BACKGROUND OF THE INVENTION

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In the technology of swim starting platforms, there is a continual need for improvements. U.S. Patent No. 5,660,013 is directed to one type of improvement for swim starting platforms. Specifically, that patent describes and claims a technological advance concerning an anchor lock system for a removable platform. The system makes use of a base plate that has four projections that, together, provide four distinct corners of a pyramidal outline. The advancement provided by the invention of the above-mentioned patent is significant. As will be appreciated, the advancement provided by the invention of the above-mentioned patent, is associated with rectangular construction configurations. As such, rectangular construction considerations, etc. must be adhered to during manufacture of systems in accordance with the invention of the above-mentioned patent.

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### SUMMARY OF THE PRESENT INVENTION

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In accordance with one aspect, the present invention provides an anchor assembly for supporting a post. The assembly includes a hollow tubular anchor body that extends along an axis and that has an arcuate interior cross-sectional area. The anchor body is configured to receive an axially-elongate tubular post that has an arcuate exterior profile and that has at least a hollow lower end bounded by an interior surface. A base plate of the assembly is connected to and closes one end of the anchor body. The base plate has an arcuate portion that is shaped congruent to the arcuate cross-sectional area of the anchor body and that is mated into the cross-sectional area of the anchor body. The base plate has an upstanding arcuate conical portion. The conical portion has a cross-sectional area that is complementary to the hollow lower end of the post and has a greatest radial dimension at a base of the conical portion. The greatest radial dimension is greater than a complementary dimension of the interior surface of the post to cause the

interior surface of the post to slide over the conical portion and the conical portion to frictionally engage the post to prevent lateral movement of the post relative to the base plate.

In accordance with another aspect, the present invention provides a base plate insert for use with an axially-elongate tubular anchor body within an anchor assembly for supporting an axially-elongate tubular post. The anchor body has an arcuate interior cross-sectional area. The tubular post has an arcuate exterior profile and has at least a hollow lower end bounded by an interior surface. The base plate is for connection to and closing of one end of the anchor body. The base plate includes an arcuate portion shaped congruently to the arcuate cross-sectional area of the anchor body for mating into the cross-sectional area of the anchor body. The base plate includes an upstanding arcuate conical portion. The conical portion has a cross-sectional area that is complementary to the hollow lower end of the post and has a greatest radial dimension at a base of the conical portion. The greatest radial dimension is greater than a complementary dimension of the interior surface of the post to cause the interior surface of the post to slide over the conical portion and the conical portion to frictionally engage the post to prevent lateral movement of the post relative to the base plate.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other features and advantages of the present invention will become apparent to those skilled in the art to which the present invention relates upon reading the following description with reference to the accompanying drawings wherein:

Fig. 1 is a view, partially in section, of an anchor assembly in accordance with the present invention, with a swim start platform post, shown in section, located therein;

Fig. 2 is a view similar to Fig. 1, but shows the anchor assembly located in a floor adjacent to a swimming pool;

1           Fig. 3 is a side view of an example base plate in accordance with the present  
2 invention and usable as part of the example anchor assembly of Fig. 1;  
3           Fig. 4 is a plan view of the base plate of Fig. 3; and  
4           Fig. 5 is a perspective view of the base plate of Figs. 3 and 4.

5           DESCRIPTION OF EXAMPLE EMBODIMENT

6           An example anchor assembly 10, in accordance with the present invention,  
7 for supporting a swim start platform post 12 is shown in Fig. 1. It is to be  
8 appreciated that the post 12 is the only shown part of the swim start platform.  
9           However, the person of ordinary skill in the art will appreciate that the swim start  
10 platform has a surface upon which a swimmer stands, prior to leaving the platform to  
11 enter swimming pool water, and a plurality of downwardly extending posts that  
12 support the platform surface. The person of ordinary skill in the art will also  
13 appreciate that the swim start platform may have various other structures,  
14 constructions, and features that need not be discussed herein. It is sufficient to  
15 appreciate that the swim start platform is removable from the anchor assembly 10  
16 and an associated floor or deck 14 (Fig. 2, hereinafter referred to simply as the  
17 floor) into which the anchor assembly is located.

18           The post 12 is tubular and elongate, at least for a segment that needs to be  
19 considered herein, along an axis 16. An exterior surface 18 of the post 12 is  
20 arcuate. Thus, the post 12 has an arcuate exterior profile. In one example, the  
21 arcuate exterior surface 18 is cylindrical about the axis 16 such that the exterior  
22 surface bounds a circle when viewed along a cross-section of the post 12 (e.g., has  
23 a circular cross-section). Also, the post 12 has at least a hollow lower end 22  
24 bounded by an interior surface 24. However, it is to be appreciated that the post 12  
25 may be hollow for a significant portion of its overall length. The interior surface 24  
26 of the hollow lower end 22 is arcuate. In the shown example, similar to the exterior  
27 surface 18, the interior surface 24 is cylindrical about the axis 16 such that the  
28 interior surface bounds a circle (e.g., has a circular cross-section).

1        A hollow tubular anchor body 28 of the assembly 10 extends along the same  
2 axis 16 when the post 12 is located within the anchor body 28. As such, the anchor  
3 body 28 is axially elongate. An interior surface 30 of the anchor body 28 is arcuate  
4 about the axis 16. In one example, the interior surface 30 is cylindrical and thus  
5 bounds a circle when viewed along a cross-section of the anchor body 28 (e.g., has  
6 a circular cross-section). The interior surface 30 of the anchor body 28 is  
7 dimensioned to be only slightly larger than the exterior surface 18 of the post 12. As  
8 such, the post 12 is insertable and removable (i.e., vertical movement) with respect  
9 to the anchor body 28. However, the fit of the post 12 into the anchor body 28 is  
10 somewhat snug to aid in prevention of lateral (i.e., side to side) movement relative to  
11 the anchor body 28. It is to be appreciated that the anchor body 28 may have  
12 surface contouring (e.g., ridges, projections, etc.) and/or other means to aid in the  
13 prevention of lateral movement of the post 12 and yet permit vertical movement for  
14 insertion and removal of the post.

15        A base plate 34 (Figs. 3-5) of the assembly 10 is an aspect of the present  
16 invention. The base plate 34 has an arcuate configuration. In the shown example,  
17 the base plate 34 has an overall circular configuration to be congruent with the  
18 circular cross-section of the anchor body 28. The base plate 34 includes an arcuate  
19 flange 36 at a lower most extent of the base plate. In the shown example, the  
20 flange 36 is circular. Specifically, a radially outer (i.e., exterior) surface 38 of the  
21 flange 36 is circular. The flange 36 has an outermost radial extent that is greater  
22 than the radial extent of the anchor body 28.

23        Located above the flange 36 is an arcuate portion 40 of the base plate 34  
24 that, in the shown example, is circular. Specifically, a radially outer (i.e., exterior)  
25 surface 42 of the arcuate portion 40 is circular. It will be appreciated that the  
26 circular shape is congruent to the circular cross-sectional area of the anchor  
27 body 28. The outer radial dimension of the arcuate (circular) portion 40 is less than  
28 the outer radial dimension of the flange 36. Also, the outer radial dimension of the  
29 arcuate portion 40 is the same as or just slightly smaller than the radial dimension of

1 the interior surface 30 of the anchor body 28. As such, the arcuate portion 40 fits  
2 into, i.e., mates with, the lowermost end of the anchor body 28. In the shown  
3 example, the anchor body 28 is affixed to the base plate 34 at the arcuate portion 40  
4 via welding or other means of connection.

5 Extending upward from the arcuate portion 40 of the base plate 34 is an  
6 arcuate conical portion 44 of the base plate 34. It is to be appreciated that the  
7 upward extend of the conical portion 44 is considered to provide an upstanding  
8 portion with regard to the rest of the base plate 34. The conical portion 44 has a  
9 cross-sectional area that is complementary to the hollow lower end 22 of the  
10 post 12. In the shown example, the conical portion 44 of the base plate 34 has a  
11 circular cross-section. As such, a radially outer (i.e., exterior) surface 46 is shaped  
12 as a circular conic. Also, in the shown example, the conical portion 44 is a  
13 truncated conic.

14 The conical portion 44 has a greatest radial dimension at a base 48 of the  
15 conical portion, which is adjacent to the arcuate portion 40. The greatest radial  
16 dimension of the conical portion 44 is less than the radial extent of the arcuate  
17 portion 40. Also, the greatest radial dimension of the conical portion 44 is greater  
18 than a complementary dimension of the interior surface 24 of the post 12. This  
19 relative dimensioning of the conical portion 44 and the post 12 causes the interior  
20 surface 24 of the post to move past/slide over an upper portion 50 of the conical  
21 portion 44. The relative dimensioning also results in frictional engage between  
22 the conical portion 44 and the post 12 at some location toward the base 48 of the  
23 conical portion to prevent lateral movement of the post 12 relative to the base  
24 plate 34.

25 In the shown example, the greatest radial dimension of the conical portion 44  
26 of the base plate 34 is sufficiently large to cause the frictional engagement with the  
27 post 12 at a location of the post that is spaced from the arcuate portion 40 of the  
28 base plate. Further, the post 12 is entrapped or squeezed between the conical

1 portion 44 and the anchor body 28 at the location of frictional engagement with the  
2 conical portion.

3 In the shown example, the anchor assembly 10 is made of at least two  
4 parts, i.e., the anchor body 28 and the base plate 34. However, it is to be  
5 appreciated that the assembly 10 may be made via unitary construction. Also,  
6 additional parts may be included in the assembly 10 without deviating from the  
7 scope of the present invention.

8 Turning the mounting of the anchor assembly 10 into the floor 14 adjacent to  
9 the pool, the floor may be made of any material. However, the floor 14 is typically  
10 made of a cement/concrete material with a sealant coating. In the shown example,  
11 the anchor assembly 10 is embedded into the material of the floor 14. The flange  
12 36 provides aid in retaining the anchor assembly 10 in the floor 14.

13 The anchor assembly 10 may have additional structure(s) to aid in retaining  
14 the assembly in the floor 14. In the shown example, the base plate 34 has an  
15 axially aligned through hole 54 that extends from a top of the conical portion 44 all  
16 the way through the bottom of the flange 36. A fastener 56 extends through the  
17 base plate 34 and into the material of the floor 14. In one example, a threaded  
18 screw may be used as the fastener 56. However, it is to be appreciated that any  
19 suitable fastener may be employed. Also, it is to be noted that an anchor  
20 member 58, such as a molley anchor, may also be used in the material of the floor  
21 to provide a location for the fastener to engage.

22 From the above description of the invention, those skilled in the art will  
23 perceive improvements, changes and modifications. Such improvements, changes  
24 and modifications within the skill the of the art are intended to be covered by the  
25 appended claims.